United States Patent [19]

Tan

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[54] VIDEO CODING METHOD AND DECODING METHOD AND DEVICES THEREOF

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[30]   Foreign Application Priority Data

Dec. 27, 1995 [JP] Japan 7-340609
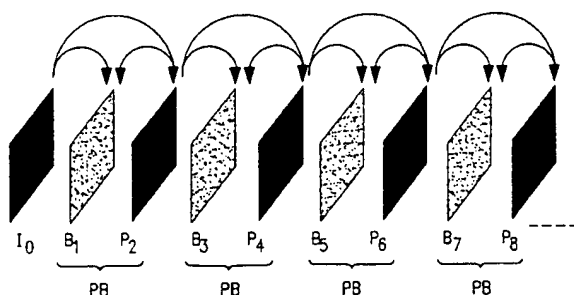
[51] Int. Cl.^{6} H04N 7/32

[52] U.S. Cl. 348/409; 348/413; 348/415; 348/699

[58] Field of Search 348/409, 413, 348/415, 396, 416, 699, 402; 382/56; H04N 7/32

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[57]   ABSTRACT

A new predictive coding is used to increase the temporal frame rate and coding efficiency without introducing excessive delay. Currently the motion vector for the blocks in the bi-directionally predicted frame is derived from the motion vector of the corresponding block in the forward predicted frame using a linear motion model. This however is not effective when the motion in the image sequence is not linear. The efficiency of this method can be further improved if a non-linear motion model is used. In this model a delta motion vector is added to or subtracted from the derived forward and backward motion vector, respectively. The encoder performs an additional search to determine if there is a need for the delta motion vector. The presence of this delta motion vector in the transmitted bitstream is signalled to the decoder which then takes the appropriate action to make use of the delta motion vector to derive the effective forward and backward motion vectors for the bi-directionally predicted block.

12 Claims, 6 Drawing Sheets

PB FRAME PREDICTION

LINEAR MOTION MODEL